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THE LOGICAL IMPLICATION OF MATTER IN THE DEFINITION OF CONSCIOUSNESS

THERE is a theory which relates consciousness and matter to each other as the opposite sides of a surface in relief. The objection to this "double aspect" theory that has weighed most, in criticism, is that the ground of the parallelism between convexity and concavity—to wit, a logical implication of each other—is obviously absent in the parallelism of consciousness and matter. Whatever parallelism experience actually finds between them is not deducible from either concept: there is nothing in the definition of the sensation blue to suggest an afferent nervous current; nothing in the latter to suggest a sensation. They are incommensurate. But when you conceive convexity, in that fact you conceive concavity also, and *vice versa*. They are related as plus and minus. The objection appeals to analysis of the definition of consciousness or of matter, or challenges the advocate of the theory to study his sensation or his neural process and see if there be anything in either of them to suggest the other.

A difficulty which immediately arises when this challenge is accepted has been understood to be decisive against the theory. It is this: Any definition of consciousness which the advocate of the theory may propose as the concept to be analyzed must, in order to fulfil the first requirement of logical definition, be in terms of that which is not consciousness. And this seems to the critic to beg the question. If you define consciousness so, he objects, you make its definition imply matter; but there is then nothing of consciousness in it; what you have got is only matter. That is to assume an equation between them. You state the value of x in terms of y, but then you haven't got x, but only y. It is otherwise with terms that really have the correlation you claim for consciousness and matter. Thus you can equate convexity with concavity in terms of either alone, as $m = -(-m)$. In this there is no assumption. But what you say of x is that it equals ay, which is something *distinguishable* from x and whose equality to x is just the problem.

But if it be allowed that the disparity between consciousness and matter must be either a distinction between two kinds of reality, or else the distinction between being and not-being, the predicament just described is worse for the critic of the "double aspect" theory than for its advocate. If the distinction is that of being and not-being, whichever is not-being has an internal constitution and structure by virtue of which parts and relations are recognized within it: matter has physical laws and the interaction of bodies; consciousness has interrelated states. Not-being, so interpreted, is hardly distinguishable from being. And if the distinction is within being, and exhausts it, either the connotation of consciousness and that of matter are referable to each other—expressible in terms of each other—or else the distinction is only denotative, and they are not distinguished as *different;* for difference is a discursive relation between differents: *dif*fering from each other is a case of *re*ferring to each other.

Excessive emphasis on the "ultimateness" and "absoluteness" of the difference between these two concepts is just the inductive cue that results in the "double aspect" theory. No one can regard consciousness as not different from matter—least of all our critic, who finds them incommensurable. Nay, among real things that are *other* than each other, experience gives us no fellow to such difference; for difference so utter, they that differ should coincide. And so, in the fact of aspect, we have, indeed, in a thousand forms, disparity that matches the difference between the concepts now before us: *e. g.,* right, left; up, down; plus, minus; convex, concave.

We confess three obvious differences between the two equations which we have taken to represent our critic's conceptions of the relation of convexity to concavity and the relation of consciousness to matter. In equation (1), which is $m = -(-m)$, representing the former relation, the same symbol m stands on both sides; in equation (2) the symbols are different, x on one side, y on the other. In (1) the coefficient also is the same on both sides, namely, unity; in (2) the coefficients are different, unity on one side, a on the other. And in (1) the signs are opposite on the two sides, while in (2) the sign is the same on both sides.

What do these differences mean? To begin with, is (1) monomial and (2) binomial? No; in spite of the fact that there is only one symbol in (1), this equation is binomial in precisely the same sense as (2) is binomial; for it means that a certain attitude toward m, symbolized by the minus sign, transforms m into something *distinguishable from m.* If equation (1) expressed an identity, it would not represent the relation of convexity to concavity, which are not identical but distinguishable. But what is thus expressed in (1) by difference of sign is expressed in (2) by difference of coefficient; for (2) means that a certain attitude toward the entity symbolized by x (an attitude symbolized by the phrase "divide by a") transforms x into y. In short, the connotation differs, on the two sides, *in both equations alike.* But, on the other hand, the denotation is the same on both sides in each equation, for such is the nature of all equations, whether binomial or any other kind. Thus we have identity of denotation with difference of connotation in each of these equations, and they are so far homogeneous with each other. Now connotation is aspect, which is determined by subjective attitude; and attitudes are interrelated in determinate and accurately expressible ways; as, for instance, by antagonism or mutual exclusion, or by any of an indefinite number of forms of implication. The difference of attitude called antipodal oppositeness, or polarity, is the specific difference expressed in equation (1); whereas the coefficient a, in (2), expresses *mere* difference of attitude, difference in general, including, therefore, that specific difference which is expressed by opposition of sign. Thus equation (1) is a case of equation (2).

To sum up: The objection, stated in these algebraic symbols, was this: m implies $-m$; x does not imply y. Express the fact of relief in terms of m and you have the correlative fact in $-m$ implied in the very definition of m; while, if you express x in terms of y, you have y values, and nothing but y. In short, x and y exclude each other; m and $-m$ imply each other. Our answer is that x implies y just as m implies $-m$; for ay is an aspect of the same denotation as x; and, since the specificity of every aspect of a given denotation is determinable or definable by relation to all other aspects of the same denotation, any one of such aspects, as x, implies, in its definition, every other, and so y, instead of excluding y.

Turning from such abstract considerations to empirical study of the sensation, the same sort of difficulty reappears. We think we find a dynamic relationship of organic to extra-organic processes; this relationship presents a material aspect, which we call neural activity, and a formal aspect, which we call blue, for instance. But the critic objects that all this is much more than sensation, and that we have read our hypothesis into our data. We must keep to the pure sensation; in that, there is no neural process. So, even as, before, all our attempts to propose a definition of consciousness for analysis were ruled out as begging the question, now every sample of the experience to be observed is rejected as impure. There is no sensation that is pure in such a sense as our critic means, for he means subjectivity that implies no objectivity. If this is more than a word, it is a self-contradiction, since subjectivity is subjectivity only in the fact of correlation with objectivity. Indeed, if our critic were to observe convexity as he proposes that we observe sensation, he would find no implication of concavity in it; nor would he find it convex. His observation would *be* the convexity; the two would coincide, and so would not be two. Convexity in its essence, as convex, would therein no longer be the object of the observation. You have to get outside of your convexity to observe it and its implication of concavity; just so, you have to get outside of your sensation to know it; in it, you know only the object of it. When convexity is said to imply concavity, convexity is just therein not "pure," as the sensation is supposed to be. "Pure" convexity, analogous to "pure" sensation or subjectivity, would be convexity without implication of concavity. That would be zero convexity, so to speak—a self-contradiction. Just so, the "pure" sensation, without implication of objectivity, is a fact of consciousness without the essence of consciousness, which is dynamic relatedness to an object. "Pure" consciousness is consciousness of nothing, or no consciousness.

If our critic have his way, we have nothing left us to discuss. Let us invite his attention to a discussable phenomenon of our own designating, and definable in some such way as this: the simultaneous belonging of an experience to an organism and to another material fact, say the sky. The two belongings are distinguished by a *sui generis* difference of direction or relational "sense," which unambiguously determines the organism to be the subject of the belonging, the sky the object. We have at least as good a right to call this phenomenon by the name of consciousness, or sensation, as our critic has to name that a sensation which he so defines that its definition is contradicted by the naming.

Now, experience is essentially dynamic, and, for an organism, to be active is to be functionally ordinated or focalized. For example, the eye and other parts may be subservient, in different ways and degrees, to the hand. Then the organism is focalized into an organ of touch, of striking, or whatever it may be. Every other function contributes as accessory to this primary function, in the organism's present phase.

We have called consciousness the formal aspect of activity, and we mean by "form" applied to activity what we mean elsewhere, determinateness or definableness. Here, in particular, it is that character that depends on resistance or reactivity. Activity without resistance would be without determination; its character or content would have vanished; it would be activity upon nothing, which, like consciousness of nothing, is nothing. So the resistance that factors in activity is not extraneous to the essence of activity, and consciousness and material processes imply each other not only with the same logical necessity but with the same polar oppositeness of mutual relation, as the aspects of relief.

Consciousness is thus the inversion or reciprocal aspect of organic activity, virtual, in distinction from externalized or real, activity. Where attention is focalized, action is most resisted. As action approaches free vent, consciousness of the object of this free activity becomes more and more evanescent. At the limit where action is unresisted, it and consciousness go out, vanish together, in inverse "senses" or directions. Where action approaches "pure" (*i. e.,* unresisted) activity, pure positivity, pure subjectivity, consciousness approaches "pure" (*i. e.,* unreacting) passivity, pure negativity, pure objectivity. And such "pure" action and consciousness are pure nothing, action on nothing, sensation of nothing. The vanishing of the two relations together is, in each case, for lack of one of its terms, the term inverse to the term lacking in the other case.

This mutual symmetry between action and consciousness is the consequence of their identity of denotation and mutual inversion of aspect; and any study of the fluctuations and transitions of consciousness, with its modulations of attention and inhibition, is accordingly a study in inverse, a perfect logical function, of corresponding modifications of organic activity; for in the play of the organic functions we shall find incessant modulations between their focalization and their dispersion, incessant shifting of their mutual rank and of the position of primacy among them, to correspond with the changes between margin and focus that are always going on among the elements of consciousness.

The organism is structurally and functionally centralized in a sensori-motor system, where the afferent activity is opposed by the efferent, in a common focus, or in coincident foci, in which action and reaction give form to each other. Here organic reaction has its inception in a preformation, schema or design, as Bergson says, of the developed activity. An intricate manifold of functions are organized: interest determines the ascendency or primacy of a certain one, while others are subservient, being inhibited or reinforced in varying degrees. The whole complex process has this character of focal, unifying organization, a unity expressed in opposite aspects as the simple form of activity, on the one hand, and as the simple object of perceptive consciousness on the other.

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